

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 6,868,851 B2  
APPLICATION NO. : 10/062176  
DATED : March 22, 2005  
INVENTOR(S) : Heinonen

Page 1 of 12

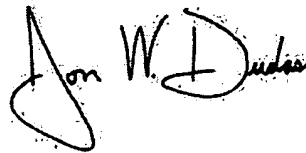
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Delete Title page illustrating figure, and substitute therefor, new Title page illustrating figure. (attached)

Delete drawing figures 1-10, and substitute therefor drawing figures 1-10, as shown on the attached sheets.

Signed and Sealed this

Second Day of January, 2007

A handwritten signature in black ink, appearing to read "Jon W. Dudas". The signature is stylized with a large, looped initial "J" and a cursive "Dudas".

JON W. DUDAS  
*Director of the United States Patent and Trademark Office*

(12) **United States Patent**  
**Heinonen**

(10) Patent No.: **US 6,868,851 B2**  
 (45) Date of Patent: **Mar. 22, 2005**

(54) **LIQUID RESERVOIR FOR NEBULIZER**

(75) Inventor: **Erikki Heinonen, Helsinki (FI)**

(73) Assignee: **Instrumentarium Corp., Helsinki (FI)**

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 39 days.

(21) Appl. No. **10/062,176**

(22) Filed: **Jun. 31, 2002**

(65) **Prior Publication Data**

US 2003/0140919 A1 Jul. 31, 2003

(51) Int. Cl.<sup>7</sup> **A61M 11/00**

(52) U.S. Cl. **128/200.22; 128/203.12**

(58) Field of Search **128/203.12, 200.22, 128/200.21, 200.14; 222/321.1, 321.8, 383.1, 384; 239/321, 518, 524, 543, 544, 79-85, 102.2, 327, 330, 331, 338**

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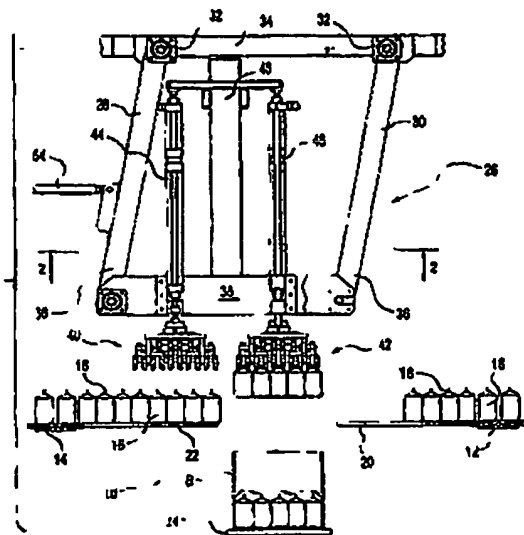
Primary Examiner—**Aaron J. Lewis**

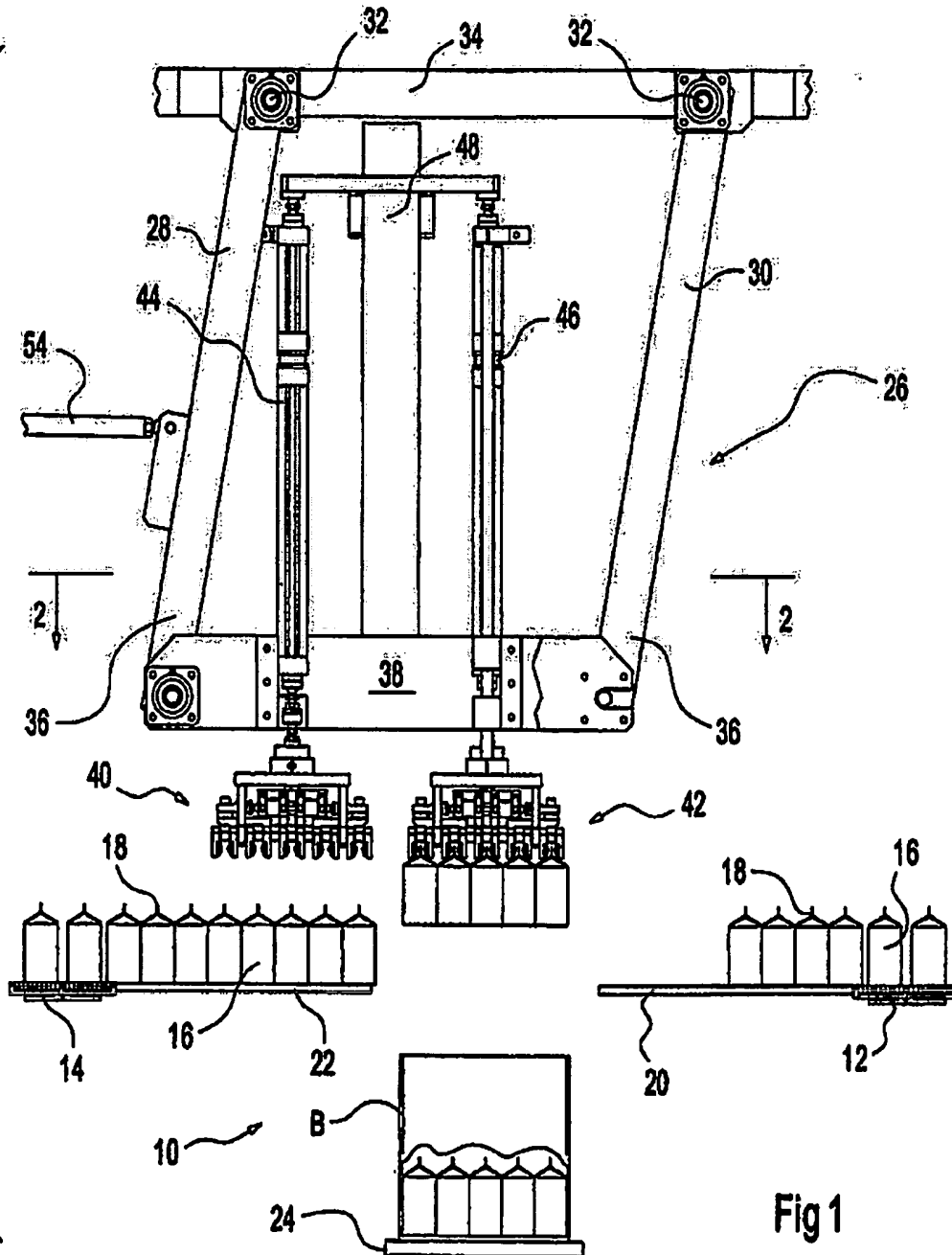
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(57) **ABSTRACT**

A liquid reservoir for a nebulizer is comprised of a pair of membranes formed of resilient material and sealed about their edges to form a closed chamber between them for containing a liquid to be nebulized. When the chamber is filled with liquid and thereby expanded, the resilient membranes are distended to apply pressure to the liquid in the chamber. A discharge valve controls the discharge of liquid from the reservoir to the nebulizer under the pressure applied by the membranes. The reservoir is mounted on the nebulizer so that one of the membranes abuts a surface of the nebulizer that concavely deforms the membrane to increase the pressure applied to the liquid in the chamber to reduce or eliminate any residual volume of liquid in the chamber at the end of the discharging operation.

20 Claims, 4 Drawing Sheets





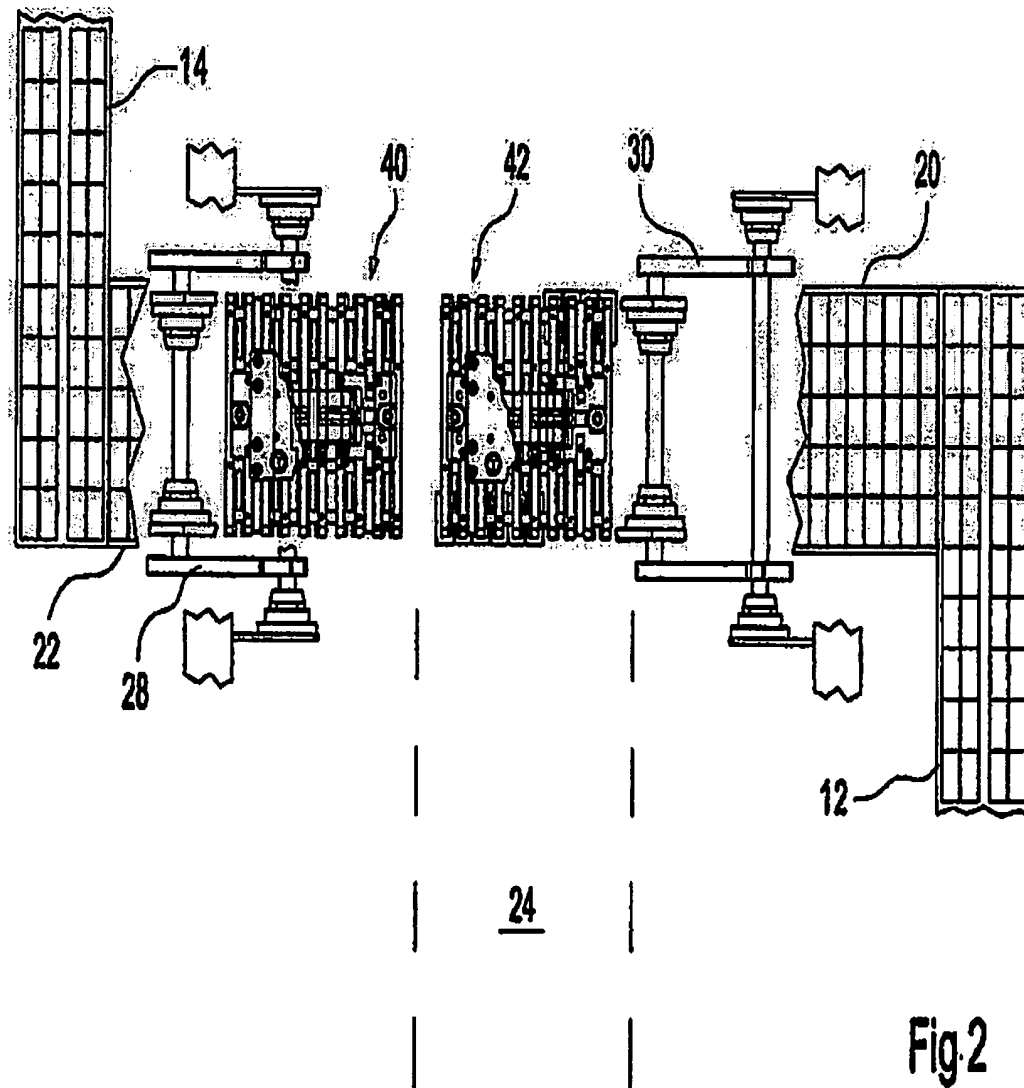


Fig. 2

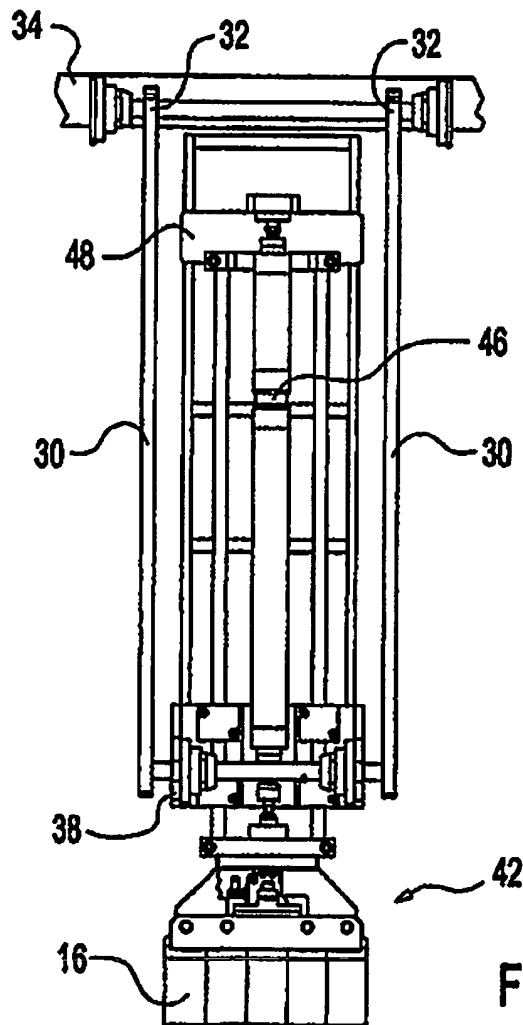
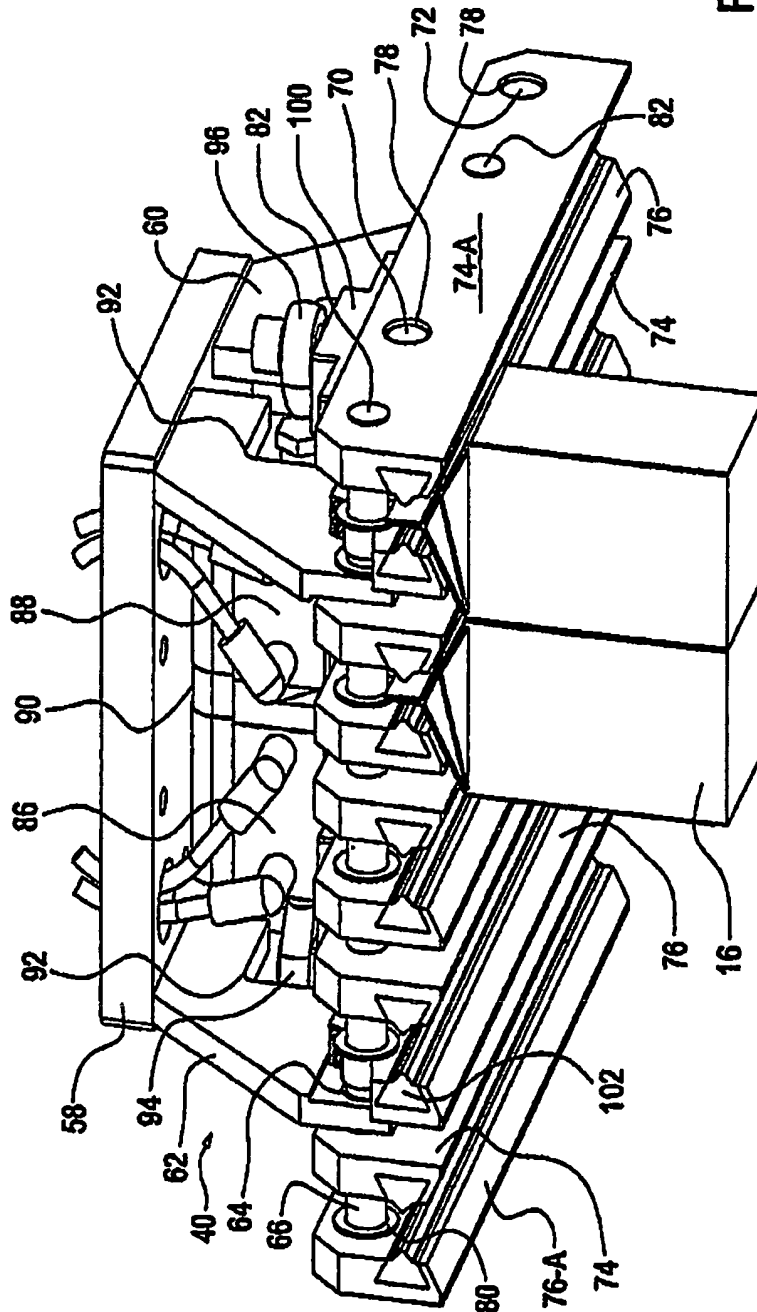


Fig 3



**Fig 5**



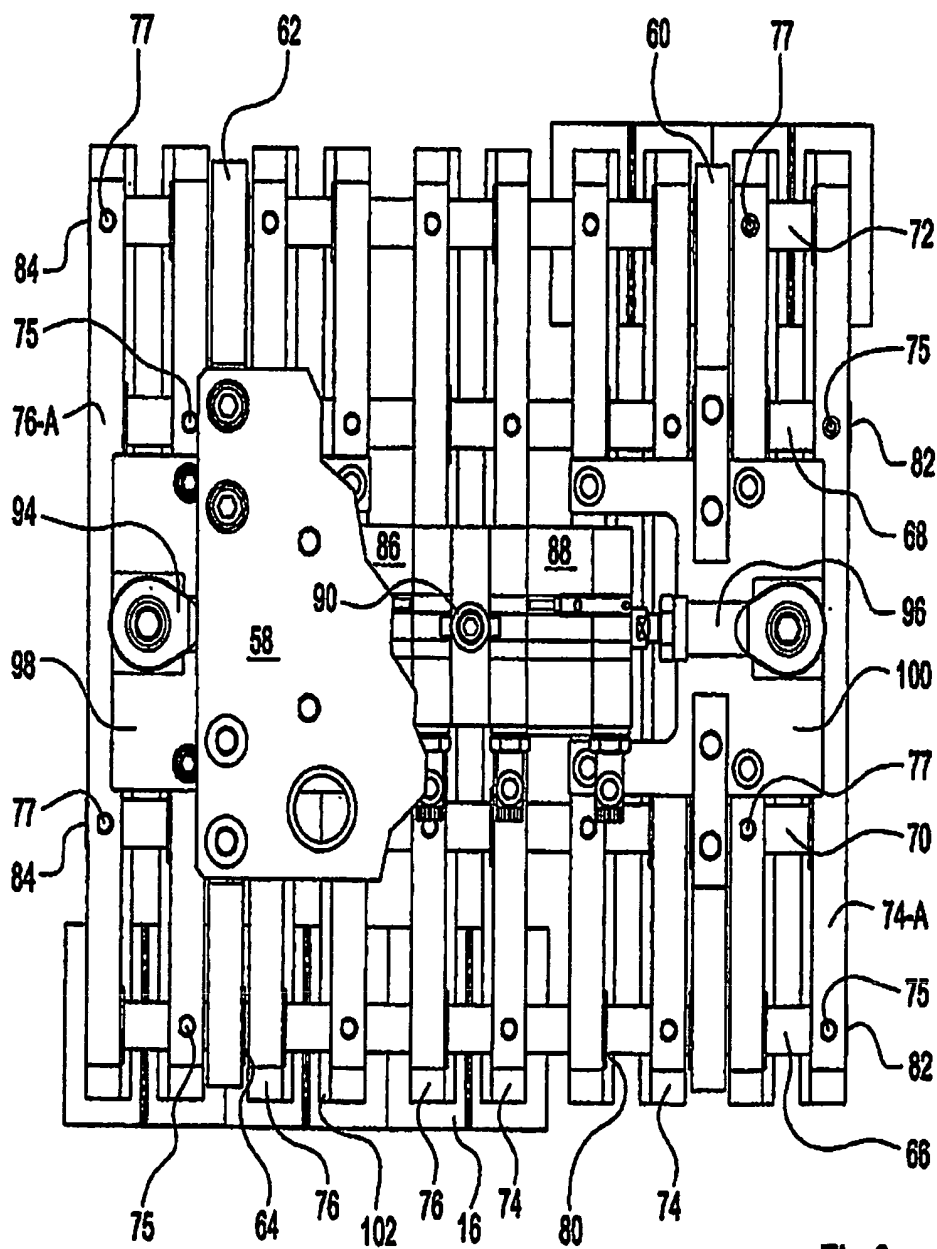


Fig 6



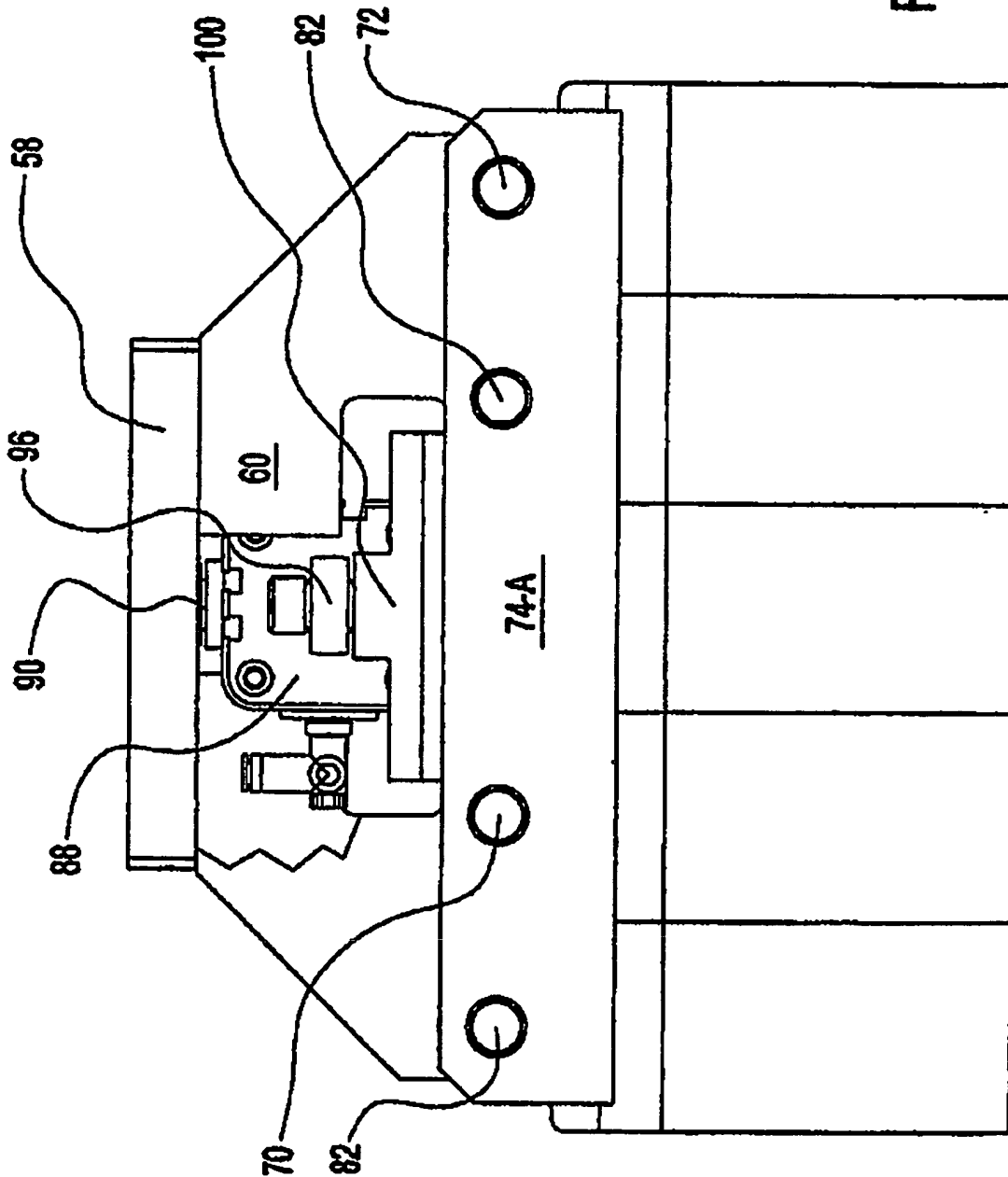
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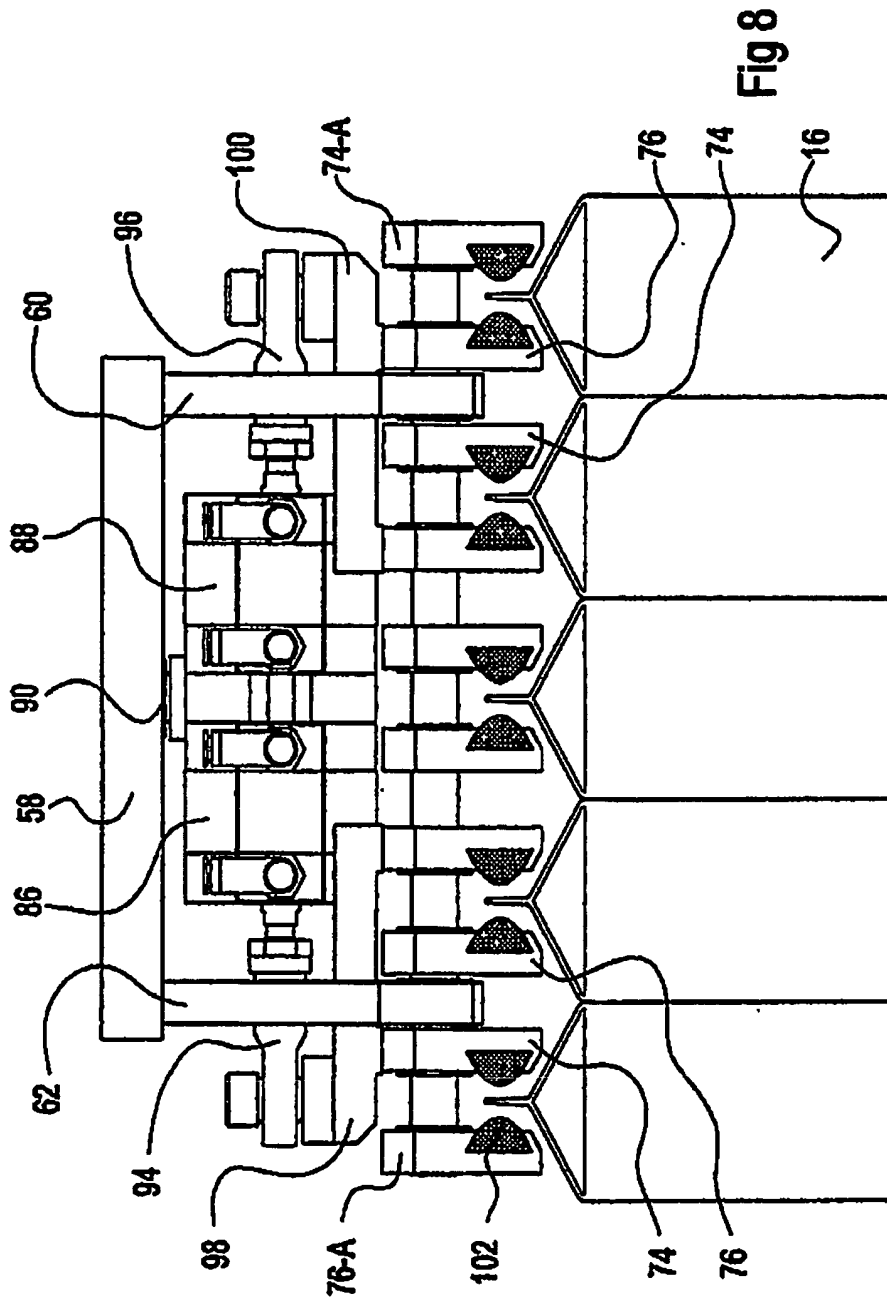
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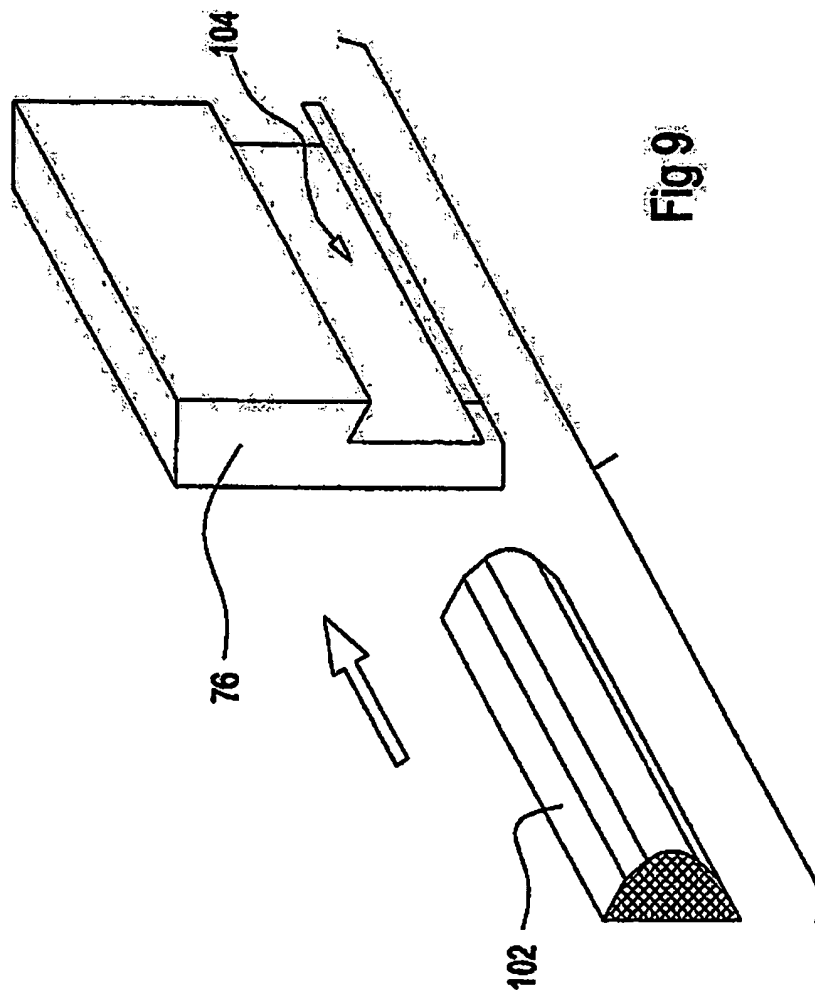
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Fig 7







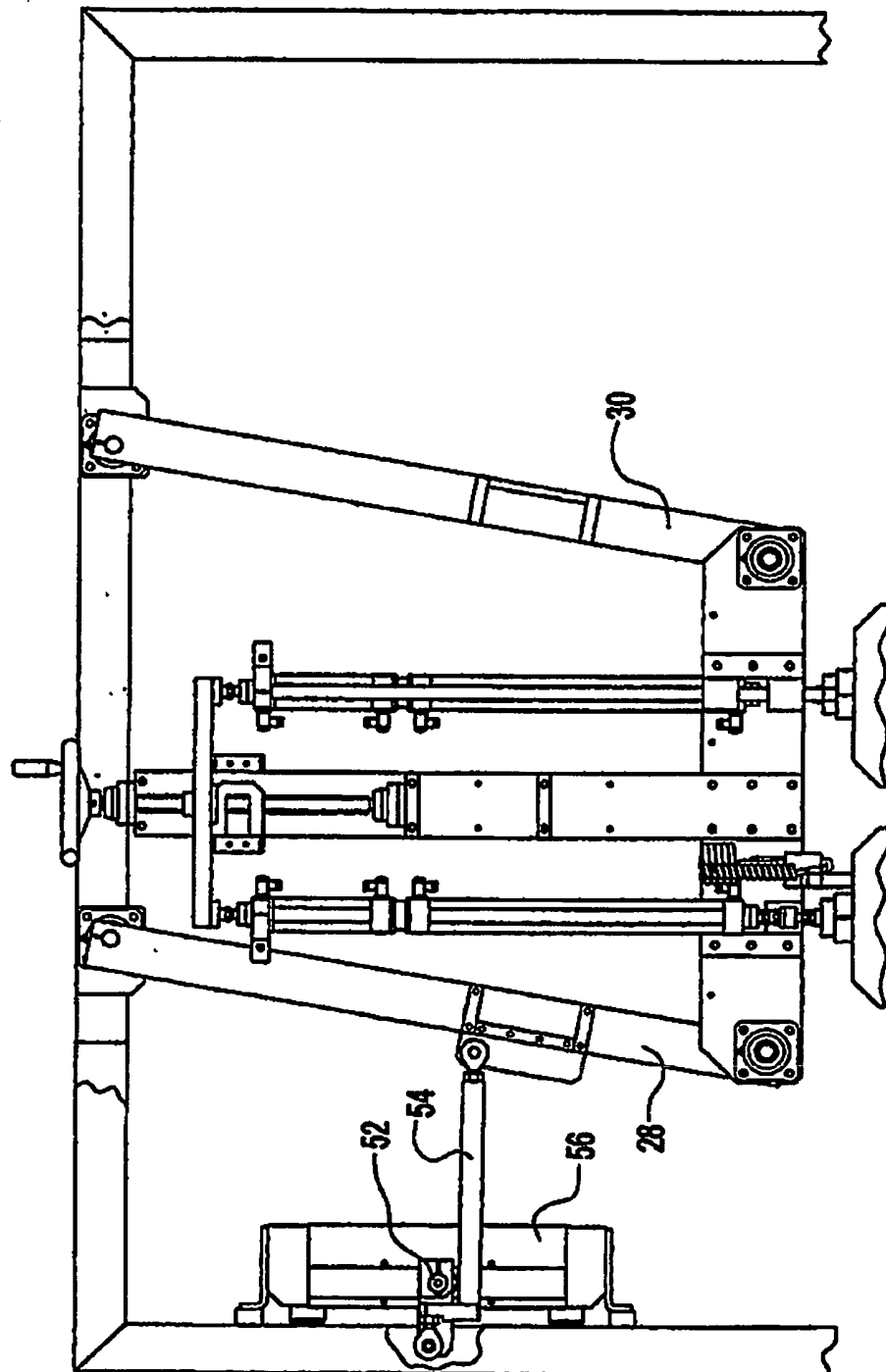


Fig 10